

*****PRACTICE EXAM 01 for***
CS16 Midterm Exam 1
E01, 09S, Phill Conrad, UC Santa Barbara
Actual exam scheduled for: 10/21/2009**

Name: _____

Umail Address: _____@ umail.ucsb.edu

Circle Lab section: 8AM 10AM 11AM noon

[Link to Printer Friendly PDF Version](#)

Please write your name **only** on this page. That allows me to grade your exams without knowing whose exam I am grading.

This exam is **closed book, closed notes, closed mouth, cell phone off**, except for:

- You are permitted **one sheet of paper** (max size 8.5x11") on which to write notes
- These sheets will be collected with the exam, and might not be returned
- Please write your name on your notes sheet

There are 100 points worth of questions on the exam, and you have 50 minutes to complete the exam.

A hint for allocating your time:

- if a question is worth 10 points, spend no more than 5 minutes on it
 - if a question is worth 20 points, spend no more than 10 minutes on it
 - etc.
-

1. (20 pts) Write the definition of a C function that takes two numbers (real numbers, not necessarily integers) as parameters, and returns the larger of the two numbers (or if they are equal, the value they are both equal to.)

Write ONLY the function definition—for this question, I do NOT want a complete C program, so do NOT include any extraneous stuff such as `#include <stdio.h>` or a main function. (See [solution](#))

2. (20 pts) There is an incomplete program below. It includes:

- the skeleton of a `main()` function (incomplete)
- a function definition for `inToCm()` — this function converts from an integer number of inches into centimeters (possibly with a decimal involved).

Add the code that would be necessary, so that this is a complete interactive program that will convert from inches to centimeters. Include code in `main` that prompts the user for input (using `printf/scanf`) and then prints the result of a function call to `inToCm()` for the user to see the result.

See the extra handout for sample output from this program.

Syntax hints:

- Be sure to use the proper `%` specifiers for various types (`%d` or `%i` for `int`, and `%lf` for `double`)
- Remember the special syntax detail that applies to using `scanf`.
- Be sure to include the special line of code that brings in "standard input/output" functions
- Be sure to include a "function prototype" for `inToCm`, since the main program (that includes the function call) appears before the function definition.
- Do what is needed at the end of the output so that the Unix prompt after the program ends appears on a new line.

See a [sample solution](#)

```
// inToCmInteractive.c      Answer to a practice exam question
// P. Conrad, for CS16    10/16/2009

int main()
{

}

double inToCm(int inches)
{
    return inches * 2.54;
}
```

3. (20 pts) For each of the following C expressions, fill in the value, and then circle the type. The first two are done for you as an example.

(See [solution](#))

expression	value	type
3	3	<input checked="" type="checkbox"/> int double char char *
0.5 * 0.5	0.25	int <input checked="" type="checkbox"/> double char char *
'3'		int double char char *
"3"		int double char char *
1 / 10		int double char char *
5 / 2.0		int double char char *
26 % 5		int double char char *
5 % 2		int double char char *
1.0 / 10		int double char char *
1 + 3 * 5		int double char char *
1 + 1 / 2		int double char char *
2.0 / 4.0 + 1		int double char char *

4. (12 pts) Convert each of the following numbers according to the instructions given:
(No solution given—you can practice these types of questions [here](#))
- a. Convert 110 111 010 from base 2 to octal

 - b. Convert 1110 0111 from base 2 to base 10

 - c. Convert 0011 1101 0011 1000 from base 2 to base 16

 - d. Convert 66 from base 10 to base 2

 - e. Convert 157a from hexadecimal to binary

 - f. Convert 644 from octal to binary

5. (8 pts) In test-driven development, we often write a stub before we write the main function. Why?
(no solution given—but if you review what we did in [lab02](#), the answer will reveal itself to you.)

End of Exam

Total Points: 80

PRACTICE EXAM 01 for CS16 Midterm Exam 1

Extra Handout

Sample Output from program in question 2:

```
-bash-3.2$ ./inToCmInteractive
This program converts inches to cm
Please enter inches: 2.54
The answer is: 5.080000
-bash-3.2$ ./inToCmInteractive
This program converts inches to cm
Please enter inches: 1
The answer is: 2.540000
-bash-3.2$ ./inToCmInteractive
This program converts inches to cm
Please enter inches: 2
The answer is: 5.080000
-bash-3.2$ ./inToCmInteractive
This program converts inches to cm
Please enter inches: 36
The answer is: 91.440000
-bash-3.2$
```